



**University of California  
Contractor Assurance System Description for  
Lawrence Berkeley National Laboratory**

**Berkeley Lab PUB-5520  
Revision 8  
November 2024**

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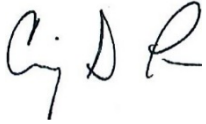
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## Record of Revisions

Rev. No.	Date	Description
1	August 2010	Revised to address requirements of Contract 31 Clause H.30. Added overview of CAS roles and responsibilities. Expanded description of UC Governance and Berkeley Lab Organization. Eliminated Environment, Health and Safety specific references required by DOE Order 226.1A.
2	October 2016	Updated description to current practice as of October 2016. Added description of Chief Operating Officer Quad Chart and Integrated Assessment Planning. Updated Governance Section to include change to UC Oversight. New diagrams throughout.
3	September 2019	Updated UC Regents committees that oversee Berkeley Laboratory and to align it with current CAS programs. Clarified assurance and governance roles and responsibilities between the Laboratory and UC. Revised language to reflect current institutional and organizational operating conditions. Revisions are considered administrative in nature (i.e., font, spelling corrections, revised graphs showing UC assurance and governance changes).
4	December 2020	Revisions are considered administrative in nature (i.e., font, spelling corrections, and typos). Deleted UCNL Enhance Partnership Team (EOPT) and Community of Practice (COP). Updated figure 2.
5	December 2021	Revisions are considered administrative in nature (i.e., font, spelling correction, and typos). Deleted the acronym BLAB and replaced with BOARD. Changed acronym BASO for Bay Area Site Office back to BSO for Berkeley Site Office. Better defined Berkeley Laboratory throughout the document by adding the word Laboratory after Berkeley. Clarified annual audit process in section 2.3.3. Clarified tools used and process for A&I activities throughout the document.
6	December 2022	Administrative changes to the CAS document. Examples include updating the UC Regents figure, streamlining language, correcting UC titles, and eliminating duplicate abbreviations.
7	November 2023	Administrative changes to the CAS document. Examples include updating figure 2 to remove (s) in the word Contractors listed in the CAC box. Correct typos, punctuation, and minor grammatical changes.

8	November 2024	Administrative changes to the CAS document. Updated name change from Office of Integrity and Assurance (OIAI) to Institutional Contractor Assurance Office (ICAO). Updated figures 2 and 3 and table of contents page numbers. Corrected typos, punctuation and minor grammatical changes.
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**Approved by:**



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9/11/2019

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Date



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## 1.0 Overview

### 1.1 Introduction

Lawrence Berkeley National Laboratory (Berkeley Lab, the Lab, or LBNL) is managed and operated by The Regents of the University of California (UC) under U.S. Department of Energy (DOE) Contract No. DE-AC02-05CH11231 (Contract 31). The UC Contractor Assurance System (CAS) for Berkeley Lab is a system of processes and tools designed to provide assurance that the Laboratory's mission objectives are achieved; its workers, the public, and the environment are protected; its operational, facility and business systems are effectively managed; and the requirements of the UC/DOE contract are met. The CAS description has been developed jointly between the UC National Laboratories (UCNL) and Berkeley Laboratory organizations. The DOE Berkeley Site Office (BSO) is provided timely notification of significant changes to the assurance system prior to implementation. The CAS has been developed to identify and resolve problems and negative performance trends before they become significant issues, systematically integrate, and align work based on risk and performance and improve work by incorporating lessons learned and best practices.

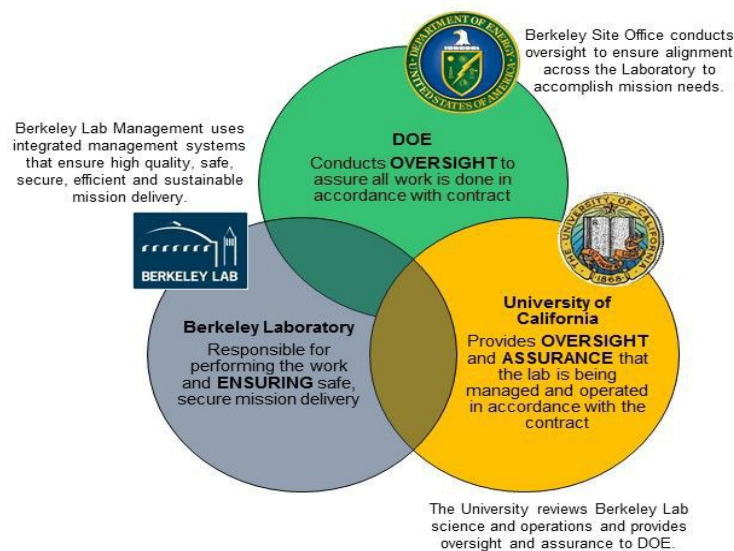


Figure 1, Tri-Parties Relationship

The assurance system is integrated with other management systems like the Integrated Safety Management System (ISMS) and utilizes metrics and other targets to drive efficient and cost-effective performance. A critical element of the UC assurance system for Berkeley Lab is a strong partnership among UC, the Lab, and DOE. This partnership is evident in the frequent formal and informal communications at all levels, transparency of management systems and processes, timely flow of information, and joint resolution of issues.

Implementation of the CAS is evaluated and reflected in the annual DOE Office of Science (SC) Performance Evaluation and Measurement Plan (PEMP) and the PEMP performance review process

which is a formal and documented evaluation and review of key performance results, risks and concerns, and assurance activities. Results for each of Berkeley Lab’s PEMP goals are reviewed and assessed regularly by respective managers from UC, Berkeley Lab and DOE SC/BSO. Significant issues and concerns that arise from the functional meetings and other CAS elements are reviewed by UC, Berkeley Lab, and DOE leadership.

## 2.0 UC Governance and Oversight Structure for Berkeley Lab

The figure below shows the UC governance and oversight structure of Berkeley Lab.

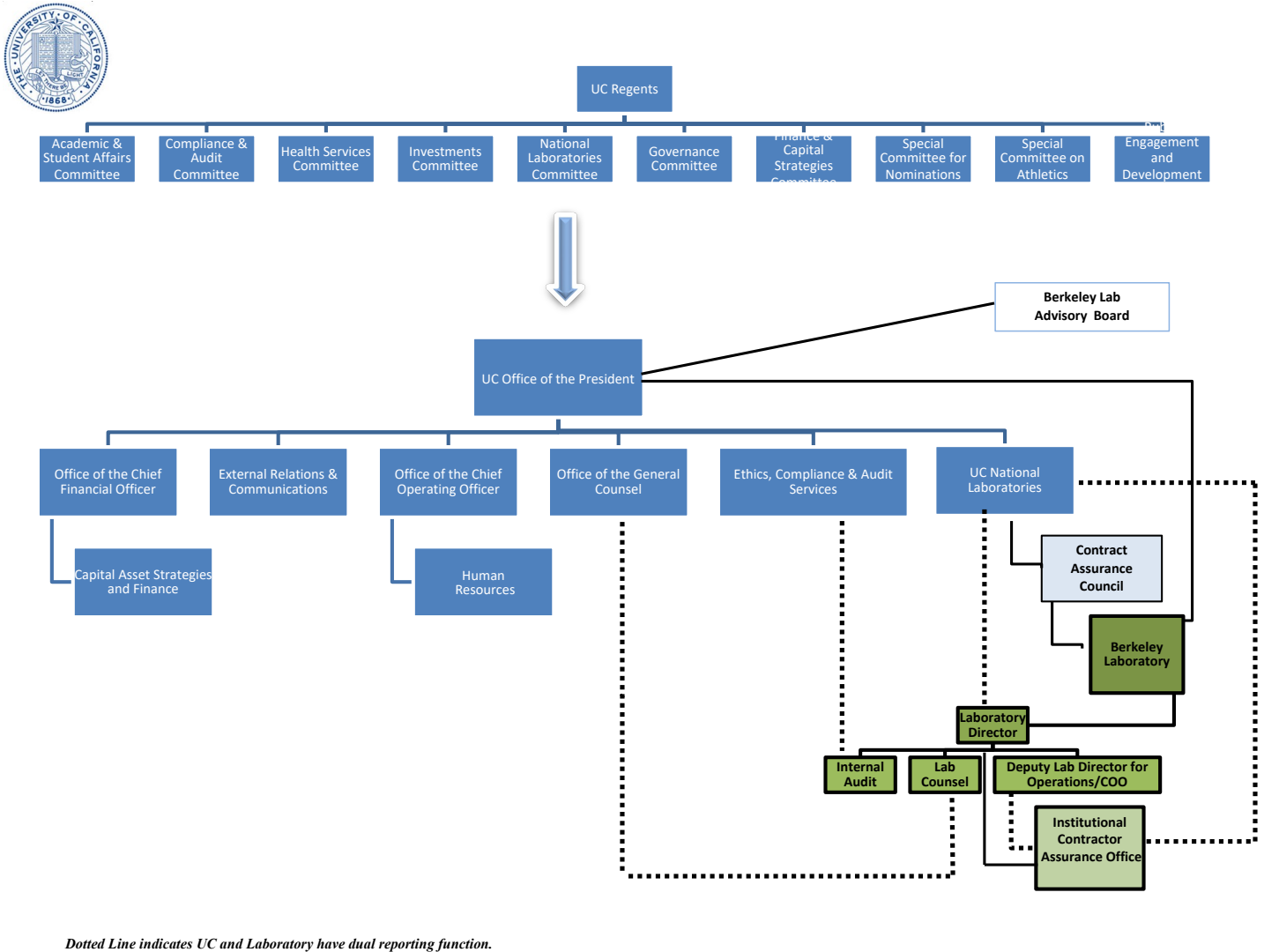


Figure 2, Governance and Assurance Relationships

### 2.1 The Board of Regents (The Regents)

UC is a public research university chartered under Article IX of the Constitution of the State of California and is administered as a public trust by The Regents of the UC, a constitutional corporation governed by a Board of Regents. The Regents appoint the President of the University and all officers of the Regents and

officers of the University. The Regents have several standing committees that address various aspects of its corporate responsibilities, including the National Laboratories Committee that is engaged in national laboratory governance and the Compliance and Audit Committee that oversees the Internal Audit function at Berkeley Lab.

UC is the sole prime contracting entity for Berkeley Laboratory. The Regents' approval is required for contract modifications that, by the determination of UC General Counsel, constitute a cardinal change to the UC/DOE prime contract as a matter of law. All other changes to the prime contract can be acted on by UCNL. The Board of Regents also have the reserved authority to approve the appointment and compensation of the Berkeley Laboratory Director and bid and proposal preparation and enter into a prime contract with the government to manage other National Laboratories or activities.

#### 2.1.1 National Laboratories Committee

The National Laboratories Committee was elevated to a Standing Committee of the Board of Regents in 2019. It provides strategic direction and oversight, makes recommendations to the Board, and acts pursuant to delegated authority on matters pertaining to the research and other activities of the Berkeley Laboratory, Lawrence Livermore National Laboratory (LLNL), and Los Alamos National Laboratory (LANL). It is charged with the oversight of relationships between and among the University, the DOE, the National Nuclear Security Administration (NNSA), other pertinent state and federal authorities, and any business partners and business entities with responsibility for management and operation of a National Laboratory.

#### 2.2 UC Office of the President (UCOP)

Management responsibility for the University is delegated by The Regents to the UC President (UCOP) and from the President to other officers of the University, including the Vice President (VP) for National Laboratories (VPNL) and the Director of Berkeley Laboratory. The Berkeley Laboratory Director reports directly to the UC President and is responsible and accountable for the Laboratory's strategic direction and day-to-day management as defined in and consistent with the prime contract and University policy.

The UC President utilizes the Berkeley Laboratory Advisory Board (Board) to provide advice about the scientific and operational aspects of the Laboratory. In order to fulfill its purpose, the Board evaluates and makes recommendations concerning the overall content and direction of the Berkeley Laboratory scientific program, UC governance of Laboratory management, and the effectiveness of the Berkeley Laboratory and UC contractor assurance functions. Both the Berkeley Laboratory Director and the VPNL are Ex-Officio members of the Board.

##### 2.2.1 Berkeley Lab Advisory Board

The Regents of the University of California (UC Regents) are responsible for the University's management and operation of Lawrence Berkeley National Laboratory (LBNL) under a contract with the U.S. Department of Energy. The Regents have delegated to the UC President authority for administration of the University, including LBNL. The President makes a recommendation to The Regents regarding the Director of LBNL, whose appointment is approved by The Regents and who is an Officer of the University.

The LBNL Advisory Board provides advice to the UC President and Lab Director about the scientific and operational aspects of LBNL. To fulfill its purpose, the Board evaluates and makes recommendations concerning the overall content and direction of the LBNL scientific program, UC governance of LBNL management, and the effectiveness of the LBNL and UC contractor assurance functions.



The Board is charged with commenting on the vision and strategy of the Laboratory; the effectiveness of the leadership, programs, and projects; the quality of the scientific staff and the intellectual and work environment; and the efficiency, effectiveness, and safe conduct of operations. The Board should become familiar with the Laboratory site and facilities and the adequacy of the infrastructure to support Laboratory missions. The Board also assesses the UC President's oversight of and support for the Laboratory's scientific mission and operations.

Members of the Board include up to 15 distinguished leaders, appointed by the UC President and drawn from academia, industry, and government. The following University officers serve on the Lab Advisory Board in an ex-officio capacity: Chair of Academic Council Special Committee on Lab Issues (ACSCOLI), the Provost and Executive Vice President for Academic Affairs, VPNL, UC Berkeley Chancellor, and Berkeley Laboratory Director. The Board members are expected to challenge and improve scientific programs and to champion best-in-class management practices and systems. The Board is co-chaired by members selected by the UC President.

The terms of the members are 3 years (staggered) and are renewable. Terms begin January 1 and run through December. The Board meets two times per year.

## 2.2.2 UC National Laboratories

Housed within UCOP and reporting to the VPNL, the UCNL plays the lead role in supporting the University's prime contract and assurance responsibilities (e.g., Contractor Assurance Council (CAC)) associated with Berkeley Laboratory. UCNL maintains close coordination with the Institutional Contractor Assurance Office in providing this assurance function. Oversight and assurance functions performed by the UCNL.

### Governance, Assurance and Oversight

- Conducts assurance meetings, usually monthly, to share and integrate tri-parties transactional oversight information.
- Convenes a UC Executive Audit Committee to oversee the efficacy of Berkeley Lab's Internal Audit Services (IAS) Department.
- Participates in Berkeley Laboratory Audit Committee.
- Submits the annual Federal Managers Financial Integrity Act (FMFIA) assurance letter pursuant to Office of Management and Budget Circular A-123.
- Conducts regular meetings with leadership at DOE to acquire feedback on UC and Berkeley Laboratory performance.
- Publishes an annual operating plan.
- Conducts CAC quarterly meetings, chaired by VPNL, and establishes focus/theme areas (e.g., risk identification and management, metrics, oversight planning, stewardship, etc.).
- Participates in key Berkeley Laboratory meetings and forums and semi-annual Tri-Party PEMP reviews.
- Utilizes Berkeley Laboratory information (e.g., risk registry, quad charts, performance metrics, assessment reports) for reviewing and understanding operational conditions at the Laboratory.
- Interfaces with other DOE leaders or commercial organizations to ascertain best practices and establish processes that benefit Berkeley Lab.

### Prime Contract Administration/Oversight and Intra-University Coordination

- Manages Contract 31 (e.g., fee negotiations, contract extensions, unallowable costs, etc.).
- Earmarks earned fee to support Berkeley in reversing negative performance trends, financing UC-owned buildings used for Laboratory purposes, funding scientific research and other programs to further the interests of the Laboratory.
- Informs the Regents, UC President, other UC officers and senior management, and the

University's Academic Senate leaders regarding performance, important issues and Laboratory risks that could potentially impact UC.

#### UC Enterprise and UC-Affiliated People and Processes

- Coordinates and leverages human capital talent and processes within the UC enterprise as well as UC-affiliated national laboratories at the request of Berkeley Lab leadership to assist in strategic planning and oversight of areas not performing adequately.

#### Key Personnel and Senior Management Selection and Evaluation

- Assists the UC President in the search and screening process for a new Berkeley Laboratory Director and other key Laboratory positions (e.g., Deputy Lab Directors).
- Coordinates the five-year performance review of the Berkeley Laboratory Director (as requested).
- Assists in the search and screening of candidates for Laboratory key personnel and other senior management positions when requested by Berkeley Laboratory leadership.

#### Mission/Program Execution Support and Science & Technology (S&T) Oversight

- Assuring the contract-compliant, effective and cost-efficient execution of Lab business and operations (B&O) functions in support of mission.
- Assuring the health and vitality of Berkeley Lab S&T programs in meeting the Laboratory's DOE mission via a rigorous and robust peer-review process.

### 2.2.3 Berkeley Laboratory Contractor Assurance Council

The CAC is chaired by the VPNL and includes UC senior managers and experienced external B&O professionals. The CAC provides input on: 1) effective UC governance of Berkeley Lab; 2) effective risk identification and quality of assessments performed by Laboratory B&O functions; 3) adherence to contract requirements and UC policy; and 4) Lab-wide issues that should be raised to the VPNL for UC institutional assurance attention and remedy. Specific CAC activities include review of the following areas:

- Contractor Assurance System(s);
- Laboratory policies, systems, procedures and practices to protect DOE and UC assets;
- B&O performance measures, metrics and results;
- Identification and prioritization of B&O risks;
- Efficiency and effectiveness of systems in supporting mission accomplishment;
- B&O management initiatives and improvements; and
- Significant Lab-wide issues that need UC institutional assurance attention and/or third-party assessments.

CAC meetings are held periodically throughout the year. Each CAC meeting has an established focus area(s) or theme(s).

### 2.2.4 Laboratory Science and Technology and Mission Execution

UCNL participates as an observer in the external independent reviews organized and directed by Berkeley Laboratory or the DOE. These include External Review Committees for Berkeley Laboratory's scientific divisions across its six science areas, major scientific facilities and/or program capital projects. This engagement enables UCNL to gain a better understanding of S&T related topics of importance for Berkeley Laboratory and its sponsors and to understand the effectiveness of the Laboratory's business and operations enterprise in supporting the Laboratory's scientific programs. UCNL participation in these reviews helps to certify that quality and rigorous standards are maintained for S&T reviews.

## 2.2.5 UC Academic Council Special Committee on Lab Issues (ACSCOLI)

ACSCOLI is a Standing Committee of the University's Academic Senate that provides Academic Senate input and advice on the University's relationship with the UC-affiliated national laboratories, including but not limited to providing advice to the President and the Regents on general policies relating to the national labs, assisting the national laboratories in their research and programmatic review procedures by identifying UC faculty with relevant technical expertise, promoting greater intellectual exchange and closer connections between the labs and UC faculty and students, stimulating faculty interaction in research collaborations with the national laboratories and validating the benefits to UC of participation in management of the national laboratories. The VPNL and Associate VPNL serve as consultants to ACSCOLI, attend meetings and provide input to ACSCOLI on matters related to the three UC-affiliated national labs.

## 2.2.6 UC Executive Audit Council for Berkeley Laboratory

The Executive Audit Council meets periodically to provide independent oversight of the Berkeley Laboratory Audit Services. The Council verifies that effective communication and functional execution is occurring while providing periodic reporting of the Council's feedback to the CAC. Committee members include the UC Senior Vice President (SVP) and Chief Compliance and Audit Officer, the VPNL, an independent external representative of the CAC and the Berkeley Laboratory Chief Audit Executive.

## 2.2.7 UC Office of Ethics, Compliance and Audit Services (ECAS)

ECAS is managed by the SVP and Chief Compliance and Audit Officer. Functions of the ECAS are to: (1) optimize ethical and compliant behavior; (2) provide assurance; and (3) improve operations through effective controls and processes. The SVP (or designee) is a member of the UC's Executive Audit Council, the Berkeley Laboratory Audit Advisory Committee and the CAC. The independence of the Berkeley Laboratory's Chief Audit Executive is assured by a direct functional reporting line to the SVP in addition to the administrative reporting line to the Berkeley Laboratory Director. The Berkeley Laboratory's annual audit plan is submitted to ECAS which is incorporated into the University's system-wide annual audit plan. The UC annual audit plan, which includes Berkeley Laboratory information, is reported to and approved by the Regents. The Regents authorizes the annual external financial audit of the University system-wide.

## 2.2.8 UC Legal – Office of General Counsel (OGC)

UC Legal is managed by the General Counsel / VP for Legal Affairs. Legal matters involving Berkeley Laboratory are reported to the Regents by the University's General Counsel. As previously mentioned, UC Legal determines Contract 31 modifications that constitute a cardinal change as a matter of law and require Regent's approval. The Berkeley Laboratory Counsel has a dual reporting relationship to UC Legal and the Berkeley Laboratory Director. UC Legal has assigned membership on the CAC.

## 2.2.9 UCOP Systemwide Functions

The University provides policy and control functions applicable to the entire University system, including Berkeley Laboratory, through UCOP's functional elements, which include the Office of Human Resources (OHR) and the Office of the Chief Financial Officer.

## 2.2.10 Office of Systemwide Human Resources (OHR)

The OHR is responsible for system-wide human resources and programs. OHR areas of responsibility

include:

- Strategic planning;
- Employee/labor relations;
- Talent management;
- Staff development;
- Senior management recruitment;
- Compensation;
- Performance management; and
- Development and maintenance of staff personnel policies.

The OHR also oversees aspects of university-wide health and welfare programs and policies as well as administration for the University of California Retirement Plan and the Retirement Savings Program plans. The retirement processing center (i.e., Retirement Administration Service Center) provides full service assistance to employees, retirees and their family members. Other examples include: property and facility guides and standards and California Environmental Quality Act compliance.

### 3.0 Berkeley Laboratory Assurance

UCNL, Berkeley Laboratory line management and the Laboratory’s independent assurance organizations (i.e., ICAO, IAS) produce the management information ultimately used as a basis for the assurance that UC provides to DOE. Figure 3 depicts the Berkeley Lab Assurance organization.

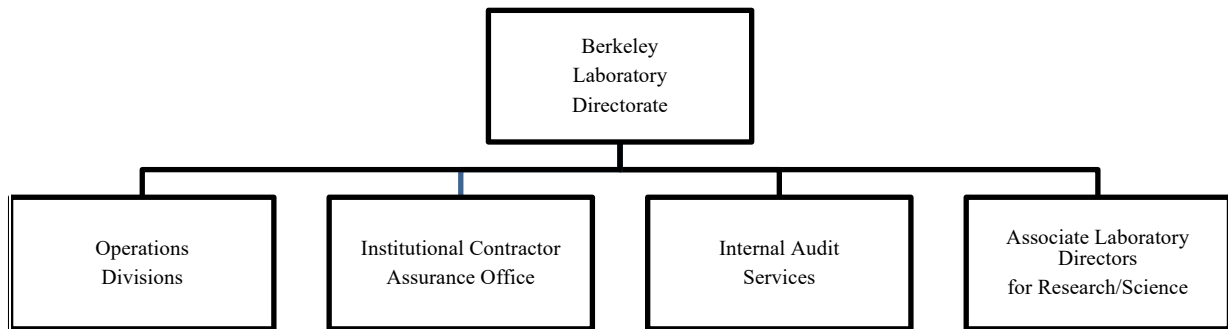


Figure 3, Berkeley Laboratory Assurance Organizational Overview

### 3.1 Berkeley Lab Management and Staff

The Berkeley Laboratory Director is an officer of the University with overall responsibility for the strategic direction and day-to-day management of Berkeley Laboratory. The Director’s leadership team sets the strategic direction, deploys resources, develops management systems, and implements process controls to address and mitigate risk. The Laboratory Director’s leadership team has the responsibility for stewardship, mission accomplishment, program development and operational excellence. Berkeley Laboratory line management and staff conduct the daily work, processes and activities of the Laboratory using management systems and process controls to achieve the objectives set by the Laboratory leadership. Line managers and staff regularly evaluate performance and assess risks with tools developed by Lab management, line organizations, and ICAO. Assessments are conducted to assure that performance is effective and meets regulatory and contractual requirements. Findings and risks are reported to Laboratory leadership and the ICAO; corresponding corrective actions are developed and tracked to resolution. Laboratory leadership regularly engage with DOE (i.e., BSO, Headquarters, Service Centers) and UCNL regarding performance results, risks, and assurance activities.

### 3.2 Institutional Contractor Assurance Office

Reporting to the Laboratory Director and indirectly to the VPNL and the Laboratory's Chief Operating Officer, ICAO is an internal independent assurance organization that provides oversight of Berkeley Laboratory's CAS and Quality Assurance (QA) management systems and operating processes, such as risk and issues management corrective action management, institutional assessment program, performance monitoring and analysis, and lessons learned and best practices (LLBP). In partnership with line management, the ICAO monitors operational performance, develops, and tracks performance metrics, and coordinates independent internal and external assessments, investigations and corrective action plan development. ICAO provides assistance, support and expertise in UCNL and DOE BSO prime contract and requirements management. In partnership with UCNL, Berkeley Lab leadership, and IAS, ICAO develops and implements CAS at Berkeley Lab.

### 3.3 Internal Audit Services

The mission of IAS is to assess and monitor the Berkeley Laboratory community in the performance of its oversight, management, and operating responsibilities in relation to governance processes, systems of internal controls and compliance with laws, regulations, contracts and policies of Berkeley Lab, UC and DOE. The IAS Director reports administratively to the Laboratory Director (or appropriate designee) and functionally to the UCOP SVP and Chief Compliance and Audit Officer. The UCOP SVP and Chief Compliance and Audit Officer reports directly to the Regents through the Committee on Compliance and Audit. The Regents have independent authority in the appointment or dismissal of the Internal Audit Services Director.

IAS provides an independent and objective assurance and consulting activity guided by a philosophy of adding value to improve Laboratory operations. IAS assists Laboratory leadership in accomplishing its objectives by bringing a systematic and disciplined approach to evaluate and improve the effectiveness of the organization's risk-management, control, and governance processes. Based on a formal and ongoing comprehensive risk assessment process, IAS develops an annual audit plan that includes audits suggested by BSO, UCNL, Berkeley Laboratory leadership, and UC system-wide topics. A draft annual audit plan is reviewed by the Berkeley Laboratory Audit Advisory Committee which is chaired by the Berkeley Lab Director and attended by Laboratory leadership, representatives of UCNL and the UCOP Chief Compliance and Audit Officer. The draft annual audit plan is submitted for approval by the DOE Contracting Officer and The Regents Committee on Compliance and Audit. Both the Berkeley Laboratory Audit Advisory Committee and The Regents Committee on Compliance and Audit meet regularly to discuss audit results, issues raised and status of follow-up on management responses to audit recommendations.

## 4.0 **Berkeley Laboratory Contractor Assurance System Processes and Activities**

Assurance activities identify and monitor risks, the effectiveness of management systems and process controls and the consistency of performance to DOE contract requirements and missions. These activities promote improvement through corrective action development and implementation and communication of operating experiences. The output provides DOE, UC and Berkeley Laboratory leadership with regular data and information on performance trends and significant or emerging risks.

Collectively, these activities and outputs comprise Berkeley Laboratory's CAS. The CAS is implemented commensurate with risk and is aligned with Berkeley Laboratory functions and work processes to promote risk identification and management. Laboratory organizations regularly evaluate and improve the performance of their units. Key assurance activities performed by Berkeley Laboratory organizations include:

- Managing contract requirements;
- Identifying and managing inherent and emerging risks;
- Monitoring performance through performance measures and assessments;
- Identifying and effectively correcting deficiencies; and
- Continuously improving processes, products and services.

The Berkeley Lab utilizes assurance processes to ensure:

- Berkeley Laboratory policies and Institutional procedures address contract requirements;
- Berkeley Laboratory management systems and process controls are working as intended to manage the Laboratory's risks while accomplishing its mission; and
- Timely and appropriate communication to DOE, UC and Berkeley Laboratory leadership, including electronic access to assurance-related information.

#### 4.1 Institutional and Organizational CAS Planning

Berkeley Laboratory plans work to execute the DOE and Laboratory mission. Planning includes ensuring that contractual and regulatory requirements are appropriately considered, and performance goals, objectives and strategic outcomes are established at institutional and organizational levels. Throughout the planning process, risks inherent to the planned work are identified so that effective controls are developed and implemented.

##### 4.1.1 Contract Assurance and Requirements Management Program (CA/RMP)

Berkeley Laboratory's CA/RMP facilitate the systems and the processes to translate and flow down Contract 31 and UC requirements into Laboratory policies, programs, and procedures that its workforce uses to effectively and efficiently meet the needs of the Laboratory and its customers and stakeholders. The program has three main elements:

- Processes to manage new or changed requirements (e.g., Requirements Management Committee);
- A business system (or database) to document and trace the relationships among Laboratory requirements, policies, programs and other institutional documents and information (Requirements Management Tracking System /SmartSheet); and
- A process (i.e., Requirements and Policies Manual) for managing Laboratory policies, programs and procedures documentation (e.g., organizational implementing documents).

##### 4.1.2 Assurance Planning and Reporting Process

Berkeley Lab functions have integrated assurance into their management systems, consistent with their strategic goals and objectives. Assurance activities are implemented for each respective function. These activities include assessments, issues and risk management, performance measures, ongoing operational awareness and reporting mechanisms. Based on the results of executing its operations, each Berkeley Laboratory line management organizational element regularly prepares a semi-annual and end of year performance report as well as meeting with the Tri-Parties to discuss the contents of the report and related performance. The report is provided to DOE, UC, and Berkeley Laboratory management for review.

##### 4.1.3 Integrated Assessment Planning and Execution

The Institutional Assessments Process (IAP) plays a key role in achieving institutional, CAS, ISMS and QA goals. The IAP utilizes a risk-based graded approach to identify and schedule Laboratory and external initiated assessments to be performed during the current fiscal year. Key sources of information that are used in the IAP include: (1) DOE assessment results or written/verbal feedback; (2) UC enterprise assessment results; (3) non-DOE, non-UC external

organization written comments; (4) Annual Audit Plan; and (5) assessments identified by Berkeley Laboratory organizations. All sources of information are calibrated to ensure that assessment activities planned for the current fiscal year provide reasonable coverage, especially for areas identified as significant, and reduce or eliminate duplicative effort to the extent feasible. Generally mid-summer, Berkeley Laboratory ICAO initiates the upcoming fiscal year IAP. Annually, DOE, UC, Berkeley Laboratory, and non-DOE, non-UC external organizational assessment activities are formalized in the Laboratory Integrated Assessment Schedule (IAS). The IAS is documented on a web-based platform and includes several types of assessments. The IAS is the Lab's official assessment tracking tool, and it demonstrates to DOE, UC and Laboratory management that the Laboratory and external entities perform rigorous, risk-based, credible assessments, and feedback and improvement activities to assure that the Laboratory has effective, efficient and safe processes to support its scientific mission. The IAS is periodically reviewed and revised, as needed, during the fiscal year as emerging assessment needs are identified or existing assessments are rescheduled or reprioritized. Assessment results are a key mechanism by which Berkeley Laboratory exercises its contractual and stewardship responsibilities by assuring that we have effective, efficient and safe processes in place to support our scientific mission. This includes: (1) monitoring the performance and effectiveness of controls (i.e. administrative, engineering, etc.); (2) identifying institutional risks and issues; and (3) sharing LL/BP information that promote continuous improvement in programs, projects, and work processes.

#### 4.1.4 Contract Management - Performance Evaluation and Measurement Plan

The PEMP serves as DOE's primary method to formally evaluate UC leadership and management of Berkeley Laboratory performance as stipulated within Contract 31. The PEMP process utilizes a common structure and scoring system across all of the SC field organizations. Structured around eight performance goals, the appraisal process emphasizes the importance of delivering S&T necessary to meet the missions of DOE; operating the Laboratory in a safe, secure, responsible and cost-effective way; and providing the leadership, stewardship and value expected by DOE. DOE solicits input from major sponsors of work at Berkeley Laboratory. The PEMP is an important planning tool because it identifies high priority initiatives (e.g., notable outcomes) in science, management, and operations that Berkeley Laboratory is expected to pursue in a particular fiscal year performance review period allowing UC and Laboratory leadership to focus on customer concerns. Outcomes of the PEMP are award of fee by the government for Laboratory performance and contract term extension by DOE.

#### 4.2 Monitoring and Feedback Programs

UC and Berkeley Laboratory leadership and staff monitor the effectiveness of internal controls to ensure that inherent risks are appropriately managed and emerging risks are identified. The Safety Concerns Program provides direct communication to the Environment, Health, and Safety Division regarding safety issues. Security and Emergency Services ensures the safety and security of Lab personnel and Lab sites. The Research Compliance Office supports the ethics and integrity of the outstanding research performed at the Lab and fosters a fair, diverse, equitable, and respectful environment. In addition, the Office for the Prevention of Harassment and Discrimination (OPHD) operates an Employee Concerns Program that provides any concerned individual a means to communicate concerns regarding the operations and management of the Laboratory and improper governmental activities. OPHD also oversees the Lab's compliance with policies that prohibit discrimination and harassment for students, faculty, and staff, including those based on sex, gender, sexual orientation, race, disability, religion, and other protected categories. The EthicsPoint system provides anonymous reporting capability and simultaneous notification to OPHD and UCOP.

#### 4.2.1 Performance Measurement

Performance measures aligned with strategic goals and objectives are vital to monitoring operational performance, analyzing data, and identifying risks, issues and emerging trends. Performance measures are used to communicate progress and trends to DOE, UC and Berkeley Laboratory leadership. Performance measures may also be used to benchmark Berkeley Laboratory performance against other organizations. Ongoing performance analysis is performed to identify and promulgate best practices and to assure that risks are mitigated, and issues and adverse trends are identified and corrected before they become significant systemic, programmatic or reoccurring issues. This analysis also is used to gauge sustained performance and identify improvement areas.

#### 4.2.3 Risk Management Process

The risk management process provides DOE, UC, Berkeley Laboratory leadership with an integrated view of the significant risks facing the Laboratory and helps assure that these risks are managed effectively. Laboratory risks are documented on the institutional risk registry. The risk registry is the official repository of institutional risk data, and includes risk mitigation and/or improvement measures, risk severity and the responsible owner of the risk. The institutional risk management universe includes risks that pose significant potential threats to Laboratory mission, strategic objectives, and operational goals, and impact such as:

- Effectiveness and efficiency of operations;
- Worker safety and health;
- Community and environmental stewardship;
- Financial and asset management;
- Regulatory and contractual compliance; and
- Laboratory reputation.

Risk management meetings provide UC and Laboratory leadership with a vehicle to identify and discuss significant risks facing the Laboratory. The primary sources of communicating Laboratory risk include the institutional metrics (both Laboratory and UC), Quad Charts, and organization performance measurements, PEMP feedback, CAC feedback, Board feedback, governance process, assessment results, high-risk adverse events and conditions, and ongoing management awareness.

#### 4.3 Continuous Improvement Program

Continuous improvement is an ongoing process that uses feedback to manage risks; improve processes, products, and services; and prevent or minimize operational problems (e.g., contractual, legal, financial, safety and security deficiencies). Improvement activities involve engaging management in prioritizing risk management and improvement opportunities. A key characteristic of continuous improvement is learning from our own operating experiences and the experiences of others, and developing and disseminating the associated lessons learned and best practices within specific Laboratory organizations, Laboratory-wide and/or to the DOE complex.

##### 4.3.1 Issues Management Program

Through the Issues Management Program, Berkeley Laboratory promptly identifies and manages issues to determine risk and severity, identify causes and mitigation, and develop, track, and effectively implement corrective actions to ensure successful resolution and prevent problems from reoccurring. Issues are managed using a risk-based approach. Significant events or issues warrant root cause analysis, extent-of-condition review, formal corrective action plan development, and verification and validation of corrective action effectiveness and sustainability. ICAO discusses significant issues and concerns with Laboratory



management and UC as necessary. Division management and ICAO elevate concerns /issues to the CAC meeting, as appropriate.

#### 4.3.2 Lessons Learned and Best Practices (Operating Experience) Process

The Berkeley Laboratory's LL/BP process is designed to develop and disseminate learnings from internal and external operating experiences to ensure continuous performance improvement, prevent new and recurring issues and adverse events/trends, and communicate implementation strategies that will assist the Laboratory in successfully meeting the missions and goals set forth by DOE. ICAO and Berkeley Laboratory leadership identify and share LLBP that originate within Berkeley Laboratory and review LLBP from external sources (e.g., DOE OPEX Share Articles, Operating Experience Summaries, industry notifications) for applicability to the Berkeley Laboratory LL/BP Operating Experience Program.

#### 4.3.3 Management Reviews

Quad Charts, institutional performance measurements, and the risk registry provide senior managers with an integrated view of overall Lab performance and the significant risks facing the Laboratory. Laboratory leadership meet on a regular basis to review and discuss these performance measures and to prioritize risk mitigation and improvement opportunities.

#### 4.3.4 Management Reporting

In addition to ongoing management oversight, Berkeley Laboratory uses several formal reporting mechanisms to communicate trends, risks, and significant issues to DOE, UC and Berkeley Laboratory leadership. Berkeley Laboratory leadership uses this information and, as appropriate, feedback from DOE and UC, to prioritize risk mitigation and improvement opportunities. These reporting mechanisms include: Quad Charts and risk registry, CAC meeting minutes, Performance Analysis Reports, and FMFIA declaration.

## Appendix A. Berkeley Lab Conformance with DOE-UC Contract 31, Clause H.30 Requirements

The Berkeley Lab CAS, as documented in the UC CAS Description for Berkeley Lab (Berkeley Lab/PUB-5520), conforms to all requirements identified in the DOE-UC Contract 31, Clause H.30-Contractor Assurance System.

<b>Contract 31, Clause H.30</b>	<b>UC CAS Description (Berkeley Lab/PUB-5520)</b>
1. “A comprehensive description of the assurance system with processes, key activities and accountabilities clearly identified.”	Entirety of UC CAS Description, PUB-5520
2. “A method for verifying/ensuring effective assurance system processes. Third-party audits, peer reviews, independent assessments and external certification (such as VPP and ISO 9001 or ISO 14001) may be used.”	Section 4.1.3, Integrated Assessment Planning and Execution Program
3. “Timely notification to the Contracting Officer of significant assurance system changes prior to the changes.”	Section 1.1, Introduction
4. “Rigorous, risk-based, credible self-assessments and feedback and improvement activities, including use of nationally recognized experts, and other independent reviews to assess and improve the Contractor’s work process and to carry out independent risk and vulnerability studies.”	Section 4.1.3, Integrated Assessment Planning and Execution Program
5. “Identification and correction of negative performance/compliance trends before they become significant issues.”	Section 4.1.3, Integrated Assessment Planning and Execution Program Section 4.2.1, Performance Measurement Section 4.2.3, Risk Management Program Section 4.3.1, Issues Management Program
6. “Integration of the assurance system with other management systems, including Integrated Safety Management.”	Section 1.1, Introduction Section 4.2.1, Integrated Assessments Planning
7. “Metrics and targets to assess performance, including benchmarking of key functional areas with other DOE contractors, industry and research institutions. Assure development of metrics and targets that result in efficient and cost-effective performance.”	Section 4.2.1, Performance Measurement
8. “Continuous feedback and performance improvement.”	Section 4.3, Continuous Improvement Program
9. “An implementation plan (if needed) that considers and mitigates risks for the CAS.”	UC Governance Structure and Institutional Assurance Plan for LBNL, September 2016
10. “Timely and appropriate communication to the Contracting Officer, including electronic access, of assurance-related information.”	Section 1.1, Introduction Section 2.2.2, UC Office of the National Laboratories (UCNL) Section 3.0, Berkeley Lab Assurance Section 3.2, Berkeley Lab Management and Staff Section 4.0, Berkeley Laboratory Contractor Assurance System Processes and Activities

## Appendix B. References

### Source Documents

1. DOE Contract No. DE-AC02-05CH11231, Clause H.30, Contractor Assurance System.
2. Berkeley Lab Requirements and Policies Manual.
3. Lawrence Berkeley National Laboratory, University of California, U.S. Department of Energy- Berkeley Site Office Operating Principles, July, 2012.
4. Contractor Assurance Policy (04.02.001.000).
5. Issues Management Policy (04.02.003.000).
6. Quality Assurance Policy (04.03.001.000).

### Implementing Documents

1. LBNL Institutional Assessment Process Description (04.02.002.001).
2. Berkeley Laboratory Advisory Board Charter.
3. Berkeley Laboratory Contract Assurance Council Charter.
4. Berkeley Laboratory Internal Audit Services Charter.
5. Requirements Management Process and Tools.
6. Requirements Management Program Overview.
7. UC Governance Structure and Institutional Assurance Plan for LBNL, March 2018
8. Issues Management Program Manual (PUB-5519).
9. Quality Assurance Program Description (PUB-3111).

## Appendix C. Acronyms

<u>Acronym</u>	<u>Title</u>
ASCOLI	Academic Council Special Committee on Lab issues
B&O	Business & Operations
BSO	Berkeley Site Office
BOARD	Berkeley Laboratory Advisory Board
CAC	Contract Assurance Council
CAS	Contractor Assurance System
Contract 31	DE-AC02-05CH11231
COP	Community of Practice
DOE	Department of Energy
ECAS	UC Office of Ethics, Compliance and Audit Services
EOPT	UCNL Enhanced Operations Partnership Team
EVP	Executive Vice President
FMFIA	Federal Managers Financial Integrity Act
IAP	Institutional Assessments Process
IAS	Internal Audit Services
IAS	Integrated Assessment Schedule
ICAO	Institutional Contractor Assurance Office
ISMS	Integrated Safety Management System
LBNL	Berkeley Laboratory, Laboratory, or Lab
LLBP	Lessons Learned and Best Practice(s)
OGC	UC Office of General Counsel
OHR	UC Office of Human Resources
OPHD	Office for the Prevention of Harassment and Discrimination
OIAI	Office of Institutional Assurance and Integrity
PEMP	Performance Evaluation and Measurement Plan
QA	Quality Assurance
RPM	Requirements Program Management
SC	Office of Science
S&T	Science and Technology
The Regents	UC Board of Regents

SVP	Senior Vice President
UC	University of California
UCNL	University of California National Laboratories
UCOP	University of California Office of the President
VP	Vice President
VPNL	Vice President National Laboratories